

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 February 2005 (03.02.2005)

PCT

(10) International Publication Number
WO 2005/010617 A2

(51) International Patent Classification⁷: **G03F 7/20**,
G02B 27/00

(21) International Application Number:
PCT/IB2004/051250

(22) International Filing Date: 19 July 2004 (19.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
03102333.6 29 July 2003 (29.07.2003) EP

(71) Applicant (for DE only): **PHILIPS INTELLECTUAL
PROPERTY & STANDARDS GMBH** [DE/DE]; Stein-
damm 94, 20099 Hamburg (DE).

(71) Applicant (for AE, AG, AL, AM, AT, AU, AZ, BA, BB, BE,
BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CY, CZ,
DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM,
HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,
LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
SE, SG, SK, SL, SY, SZ, TJ, TM, TN, TR, TT, TZ, UA, UG,

UZ, VC, VN, YU, ZA, ZM, ZW only): **KONINKLIJKE
PHILIPS ELECTRONICS N. V.** [NL/NL]; Groenewoud-
seweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **APETZ, Rolf Theo
Anton** [DE/DE]; c/o Philips Intellectual Property &, Stan-
dards GmbH Weissshausstr. 2, 52066 Aachen (DE).

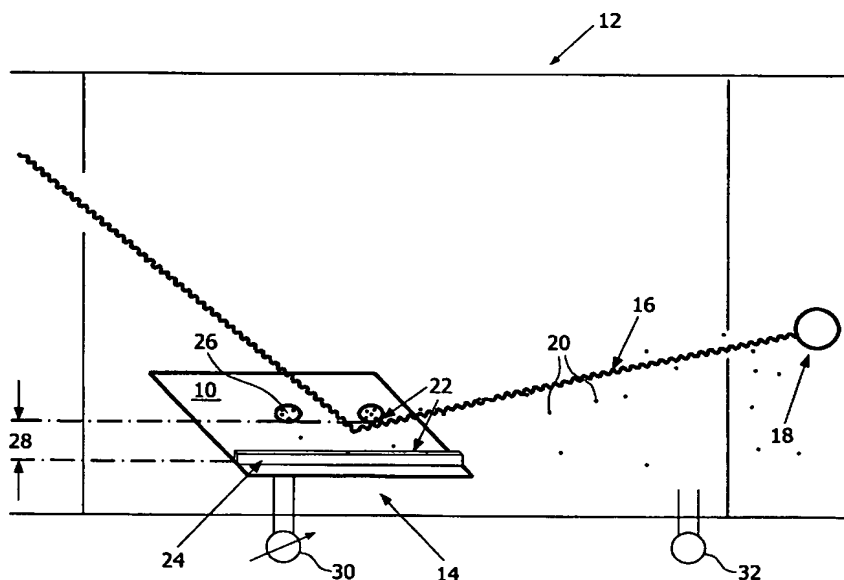
(74) Agent: **VOLMER, Georg**; Philips Intellectual Property
&, Standards GmbH Weissshausstr. 2, 52066 Aachen (DE).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: METHOD OF CLEANING AT LEAST ONE SURFACE OF AN OPTICAL DEVICE DISPOSED IN A VACUUM CHAMBER



(57) Abstract: A method of cleaning at least one surface of an optical device disposed in a vacuum chamber, which is at least partially contaminated by atoms and/or ions of metalloid and/or metal introduced by a radiation source generating, in particular, extreme ultraviolet radiation and/or 10 soft X-rays is described. In order to achieve a longer service life for the optical device (14), the method is designed such that a temperature prevailing on the surface (10) and/or a pressure in the vacuum chamber (12) is adjusted in such a way that the atoms and/or ions (20) hitting the surface (10) can move upon it.

WO 2005/010617 A2



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.